



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,732	03/08/2002	Hiroshi Kajiyama	3620-4014	5009
27123	7590	09/27/2004		
MORGAN & FINNEGAN, L.L.P. 3 WORLD FINANCIAL CENTER NEW YORK, NY 10281-2101			EXAMINER BEFUMO, JENNA LEIGH	
			ART UNIT 1771	PAPER NUMBER

DATE MAILED: 09/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/018,732		KAJIYAMA ET AL.	
	Examiner		Art Unit	
	Jenna-Leigh Befumo		1771	

KB

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-75 is/are pending in the application.
- 4a) Of the above claim(s) 1-4 and 12-75 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/02, 12/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group II, claims 5 – 11 in the reply filed on May 7, 2004 is acknowledged. The traversal is on the grounds that the claims represent a single inventive concept, particularly a polylactic acid composition comprising at least 95% of the L-isomer. This is not found persuasive because not all the independent claims include this limitation and therefore, the groups are not drawn to the particular inventive concept as argued by the applicant.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 1 – 4 and 12 – 75 are withdrawn from consideration as being drawn to a nonelected invention.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 5 – 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. The phrase “a multifilament comprising” in claims 5 – 11 is indefinite. First, it is unclear if the applicant means to claim a single filament or many filaments grouped together. And if the applicant intends to claim many filaments, how are they grouped together? Are the filaments combined together to form a multifilament yarn, a fiber bundle, a fabric, or something else?

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5 – 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10287735 A (English Translation).

JP 10287735 A discloses a polylactic acid composition polymerized by combining the lactic acid L-isomer and/or D-isomer with a tin octoate catalyst in the amount of 0.0001 – 0.003 mol%, which would be about 1 to 30 ppm (abstract). Further, JP 10287735 A discloses how to produce polylactic acid with a weight average molecular weight of 200,000 or more (paragraph 14). And the invention can be made from an L-lactic acid homopolymer, which would have a 100 mol% of the L-isomer lactic acid (paragraph 18). Further, JP 10287735 A discloses that the polymer can be used to form various materials such as fibers, molded goods, films, nonwoven fabrics, ropes, knits, and textiles (paragraph 22).

JP 10287735 A fails to disclose the relative viscosity, residual monomer content, and the number average molecular weight of the polylactic acid composition produced. It is noted that the relative viscosity will determine how well the polymer will flow through machinery such as extrusion equipment. Thus, a material will need a specific viscosity range to be extruded without being too thick that the polymer blocks up the machinery, and without being too thin that the polymer flows readily through the machinery but forms fibers or films which easily break before the polymer cools into a solid material. Further, the weight average and number average

molecular weight of the polymer are related to the viscosity of the polymer since these properties measure the size and number of polymer chains in the polymeric material. Therefore, it would have been obvious to one of ordinary skill in the art to control the number average molecular weight and optimize the claimed relative viscosity in the polylactic acid taught by JP 10287735 A so that the polymer will readily process through extrusion equipment without blocking up machinery or producing extruded products that won't maintain a film or fiber shape before cooling.

Further, it would have been obvious to one of ordinary skill in the art to remove any residual monomer from the polymerization product to remove any impurities from the finished polymer product which would lower various properties of the finished product, including the melting temperature, tensile properties, and crystallinity.

Finally, the tensile strength, concentration ratio in boiling water, birefringence, and thermal peak stress temperature will be a result of the polymerization process and the polymer chains size and structure. Although the limitations of the tensile strength, concentration ratio in boiling water, birefringence, and thermal peak stress temperature are not explicitly taught by JP 10287735 A, it is reasonable to presume that said limitations would be inherent to the invention. Support for said presumption is found in the use of similar materials (i.e. L-isomer lactic acid monomers, and a tin catalyst) and in the similar production steps (i.e. a ring-opening polymerization process initiated by a tin catalyst) used to produce the polylactic acid. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594. Therefore, claims 5 – 8 are rejected.

8. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10287753 A in view of Matsui et al. (6,174,602).

The features of JP 10287753 A have been set forth above. JP 10287753 A discloses that the polymer material can be formed into fibers, knitted materials and textiles which would require extruding the polymer material to produce filaments. However, JP 10287753 A fails to disclose how the fibers are extruded. Matsui et al. is drawn to polylactic acid polymers produced into fibers. Matsui et al. discloses that the polymer can be extruded by melt spinning preformed at high speed with a take-up speed of 2,000 – 5,000 m/minute, a drawing step with a draw ratio of about 1.5 to 2.5 and a heat treatment step can be preformed as well (column 9, lines 20 – 35). Thus, it would have been obvious to one of ordinary skill in the art to use the extrusion process described by Matsui et al. with the polylactic acid polymer of JP 10287735 A since Matsui et al. discloses how to produce filaments from polylactic acid polymers. Further, it would have been obvious to one of ordinary skill in the art to optimize the temperature range of the drawing and heat treating steps to produce filaments with a crystal structure that is oriented during the drawing step and then heat treated after the drawing step to permanently set the changes produced during drawing in the finished filament. The temperature range would be chosen based on the melting properties of the polymer such that the temperature will be higher than the glass transition temperature so that the crystalline structure will be more easily oriented and set in a new position without using a temperature that is too high so that the polymer will melt and break the fiber during processing. Thus, claims 9 and 10 are rejected.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10287735A in view of Matsui et al. and *Wellington Sears Handbook of Industrial Textiles* (pages 57 – 60).

The features of JP 10287735 A and Matsui et al. have been set forth above. JP 10287735A fails to teach how the polymer is extruded to produce fibers. As set forth above, Matsui et al. discloses how the polymer can be melt spun to form filaments with drawing and

Art Unit: 1771

heat setting following the extrusion steps. *Wellington Sears Handbook of Industrial Textiles* discloses that melt spinning can include a series of heated godets which draw the filaments to increase polymer orientation (page 60). Therefore, it would have been obvious to one of ordinary skill in the art to melt spin the polymer of JP 10287735 A by including a drawing step with heated rollers and a heat treatment step after the drawing step to produce oriented fibers with better strength properties. Therefore, claim 11 is rejected.

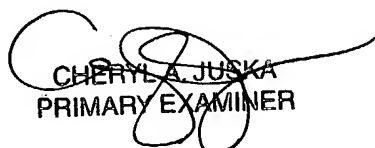
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jenna-Leigh Befumo whose telephone number is (571) 272-1472. The examiner can normally be reached on Monday - Friday (8:00 - 5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jenna-Leigh Befumo
September 19, 2004



CHERYL A. JUSKA
PRIMARY EXAMINER